**Promotion of S&T**

1466. PROF. M. SANKARALINGAM: Will the Minister of SCIENCE AND TECHNOLOGY be pleased to state:

(a) the steps taken by Government to promote research activities in the fields of Science and Technology during the last five years;

(b) the steps taken by Government to encourage students in schools and colleges to take up Science and Technology, considering that there is a decline in the number of students taking up Science and Technology discipline in schools and colleges; and

(c) the details of funds allocated and spent by Government during the last five years to set up labs and to help spreading of Science and Technology in the nooks and corners of the country?

THE MINISTER OF STATE IN THE DEPARTMENT OF SCIENCE AND TECHNOLOGY IN THE MINISTRY OF SCIENCE AND TECHNOLOGY (SHRI BACHI SINGH RAWAT): (a) The Government has taken a number of steps to promote research activities in the last five years in various fields of S&T. These included support to individual research projects; mission mode projects; establishment of new research centres of excellence, facilities, institutions and Boards; international collaborative projects and establishment of collaborative institutions with other countries; facilitating interaction among scientists in the form of seminars, symposia and workshops; strengthening of R&D infrastructure in academic institutions and research labs; massively networked technology development projects; assistance for technology development and commercialization; increase in number and amount of junior and senior research fellowships; institution of prestigious Swarnajayanti Fellowships for outstanding young scientists; institution of Shyama Prasad Mukherjee Fellowships for Young Scientists; Fast Track Research Projects for Young Scientists; interaction of students with Nobel Laureates; institution of special scheme for Women Scientists to enable them to re-enter mainstream research.

New initiatives being undertaken in the 10th Plan are in the areas of Seismology; Nano Materials Science & Technology; Drugs and Pharmaceuticals; Disaster Management Support Programme for

North-East; Advanced Heavy Water Reactor and Thorium Utilization; Accelerator Driven Subcritical Systems; Genomics; New Generation Vaccines; Bioresource Characterization and Bio-fuels; Leather Processing Technology; Traditional Knowledge Digital Library; Second Permanent Station in Antarctica; Integrated Coastal and Marine Area Management; Technology Demonstration of Ocean Energy Conversion Plant; etc.

The Government has announced a new Science and Technology Policy-2003 recognizing the changing context of the scientific enterprise and to meet the present national needs in the era of globalization. The Government has reaffirmed its commitment to the pursuit and promotion of science and technology and research work.

The allocation for R&D for S&T Department/Agencies has been doubled in the 10th Plan in comparison to the 9th Plan.

(b) The Government has already initiated several programmes to attract and encourage young school and college students to take up science and technology. These include the Integrated Science Olympiad Programme, National Children's Science Congress, CSIR Programme on Youth Leadership in Sciences (CPYLS), Contact Programme for Talented School Students, Kishore Vaigyanik Protsahan Yojana (KVPY), Biotechnology Scholarships, etc.

(c) The Annual Plan allocations and actual expenditure/revised estimates in respect of S&T Departments/Agencies, *viz.* Department of Science and Technology, Department of Biotechnology, Department of Ocean Development, Department of Space, Department of Scientific and Industrial Research/Council of Scientific and Industrial Research and Department of Atomic Energy (R&D Sector), for the last five years are given below:

(Rs. in crores)

| Year | Allocation/Budget Estimates | Actual Expenditure/Revised Estimates |
|---|---|---|
| 1999-2000 | 2643.00 | 2488.20 |
| 2000-2001 | 3097.00 | 2837.72 |

| Year | Allocation/Budget Estimates | Actual Expenditure/Revised Estimates |
|---|---|---|
| 2001-2002 | 3256.00 | 3018.20 |
| 2002-2003 | 3950.00 | 3577.20 |
| 2003-2004 | 4269.00 | N/A |

**Technique for examining DNA**

1467. SHRI RAMA MUNI REDDY SIRIGIREDDY: Will the Minister of SCIENCE AND TECHNOLOGY be pleased to state:

(a) whether it is a fact that scientists of CCMB, Hyderabad, have discovered a new technique for examining DNA;

(b) if so, the details of this new technique; and

(c) how it would help in catching the poachers of animals?

THE MINISTER OF STATE IN THE DEPARTMENT OF SCIENCE AND TECHNOLOGY IN THE MINISTRY OF SCIENCE AND TECHNOLOGY (SHRI BACHI SINGH RAWAT): (a) and (b) Yes, Sir. The technique is based on the indigenously developed novel universal primers, to amplify and sequence a specific fragment of mitochondrial cytochrome *b* gene from vast range of animal species in a universal manner. The amplified product obtained from a confiscated biological sample, is in fact the molecular signature of the species of sample in question. The comparison of this signature with the signatures of known animal species available in the database of signatures, generated and maintained by CCMB, reveals the identity of the unknown sample beyond a reasonable doubt.

(c) Establishing species identify of confiscated animals is a great challenge to law enforcement agencies. The technique developed at CCMB is able to establish exact identity of confiscated animals(s) or part(s) and product(s) thereof. This DNA-based approach, without any prior information about the history of a forensic sample, is able to establish whether a drop of blood, tiny piece of meat or bunch of hairs belong to human or animal, and if animal, to which species of the animal.